

## **Development of cost effective ECG data acquisition system for clinical applications using LabVIEW**

### **Abstract**

The main objective of this work is to develop a portable and cost effective data acquisition (DAQ) system for clinical applications. This DAQ consists of several modules such as power supply, analog to digital converter (ADC), amplifiers, isolators, filters and interfacing circuits. The complete data acquisition circuit has been developed using This system mainly aims to collect the ECG signals of frequency between 0.05 Hz and 113 Hz with a gain of 3113. This frequency information from the ECG signal is highly useful clinical applications such as SCA prediction, cardiovascular disease (CVD) detection, etc. ECG signals will be collected from the subjects using 3 leads system and given to DAQ for recording the ECG signal. The acquired signal through this DAQ will then be transferred to the Notebook through NI6008 data acquisition card. This DAQ interface is used to convert the input analog signal to digital signal output and to save the ECG data in the notebook using Labview software. This acquired signal from Labview software is used for further clinical investigation. We also developed a Graphical User Interface (GUI) in LabVIEW software to continuously monitor the ECG signal traces and to record the ECG data with higher precision. The morphology of the acquired ECG signal in the system is highly precise and useful for clinical diagnosis. Furthermore, this proposed system is used for developing sudden cardiac arrest (SCA) prediction in our university.

**Keywords** — Data acquisition system, ECG, LabVIEW, National Instruments (NI)